



SSF2816EBK

20V Dual N-Channel MOSFET

DESCRIPTION

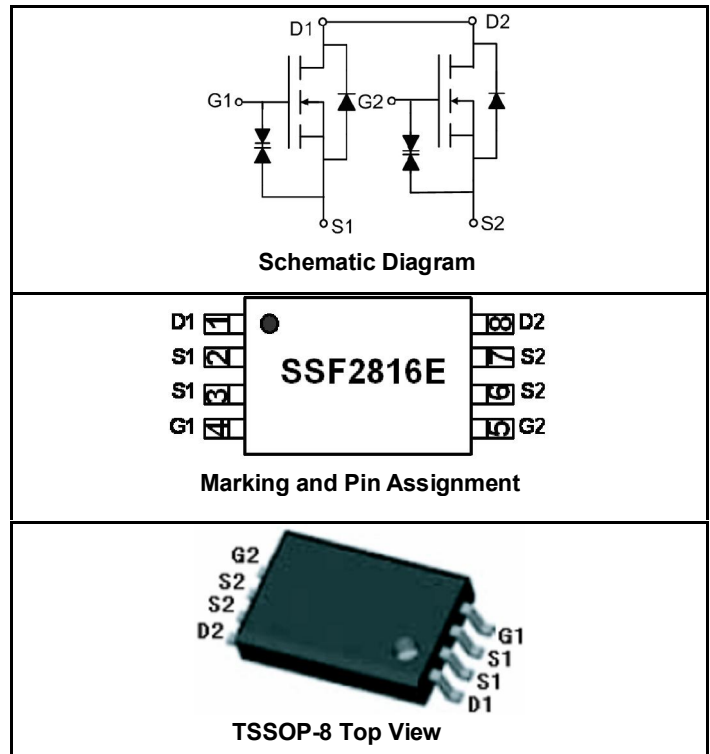
The SSF2816EBK uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V.

GENERAL FEATURES

- $V_{DS} = 20V, I_D = 7A$
 $R_{DS(ON)} < 30m\Omega @ V_{GS}=2.5V$
 $R_{DS(ON)} < 26m\Omega @ V_{GS}=3.1V$
 $R_{DS(ON)} < 23m\Omega @ V_{GS}=4V$
 $R_{DS(ON)} < 22m\Omega @ V_{GS}=4.5V$
- ESD Rating: 2000V HBM
- High Power and current handling capability
- Lead free product
- Surface Mount Package

APPLICATIONS

- Battery protection
- Load switch
- Power management



PACKAGE MARKING AND ORDERING INFORMATION

Device Marking	Device	Device Package	Reel Size	Tape Width	Quantity
SSF2816E	SSF2816EBK	TSSOP-8	Ø330mm	12mm	3000 units

ABSOLUTE MAXIMUM RATINGS ($T_A=25^{\circ}C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 12	V
Drain Current-Continuous@ Current-Pulsed (Note 1)	I_D	7	A
	I_{DM}	25	A
Maximum Power Dissipation	P_D	1.5	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	$^{\circ}C$

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Ambient (Note 2)	$R_{\theta JA}$	83	$^{\circ}C/W$
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ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V I _D =250μA	20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =20V, V _{GS} =0V			1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±4.5V, V _{DS} =0V			±200	nA
		V _{GS} =±10V, V _{DS} =0V			±10	uA
ON CHARACTERISTICS (Note 3)						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.6	0.75	1.2	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =4.5V, I _D =6.5A		16.5	22	mΩ
		V _{GS} =4V, I _D =6A		17	23	mΩ
		V _{GS} =3.1V, I _D =5.5A		19	26	mΩ
		V _{GS} =2.5V, I _D =5.5A		22	30	mΩ
Forward Transconductance	g _{FS}	V _{DS} =10V, I _D =6.5A		6.6		S
DYNAMIC CHARACTERISTICS (Note4)						
Input Capacitance	C _{iss}	V _{DS} =8V, V _{GS} =0V, F=1.0MHz		600		PF
Output Capacitance	C _{oss}			330		PF
Reverse Transfer Capacitance	C _{rss}			140		PF
SWITCHING CHARACTERISTICS (Note 4)						
Turn-on Delay Time	t _{d(on)}	V _{DD} =10V, I _D =1A V _{GS} =4.5V, R _{GEN} =6Ω		10	20	nS
Turn-on Rise Time	t _r			11	25	nS
Turn-Off Delay Time	t _{d(off)}			35	70	nS
Turn-Off Fall Time	t _f			30	60	nS
Total Gate Charge	Q _g	V _{DS} =10V, I _D =7A, V _{GS} =4.5V		10	15	nC
Gate-Source Charge	Q _{gs}			2.3		nC
Gate-Drain Charge	Q _{gd}			3		nC
DRAIN-SOURCE DIODE CHARACTERISTICS						
Diode Forward Voltage (Note 3)	V _{SD}	V _{GS} =0V, I _S =1.5A		0.84	1.2	V

NOTES:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production testing.

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

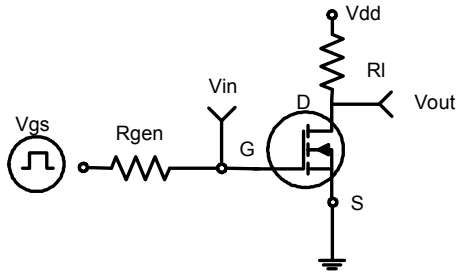


Figure 1: Switching Test Circuit

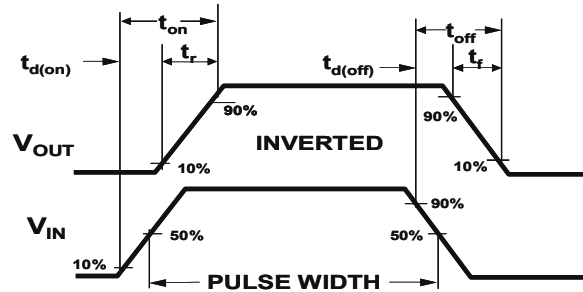


Figure 2: Switching Waveforms

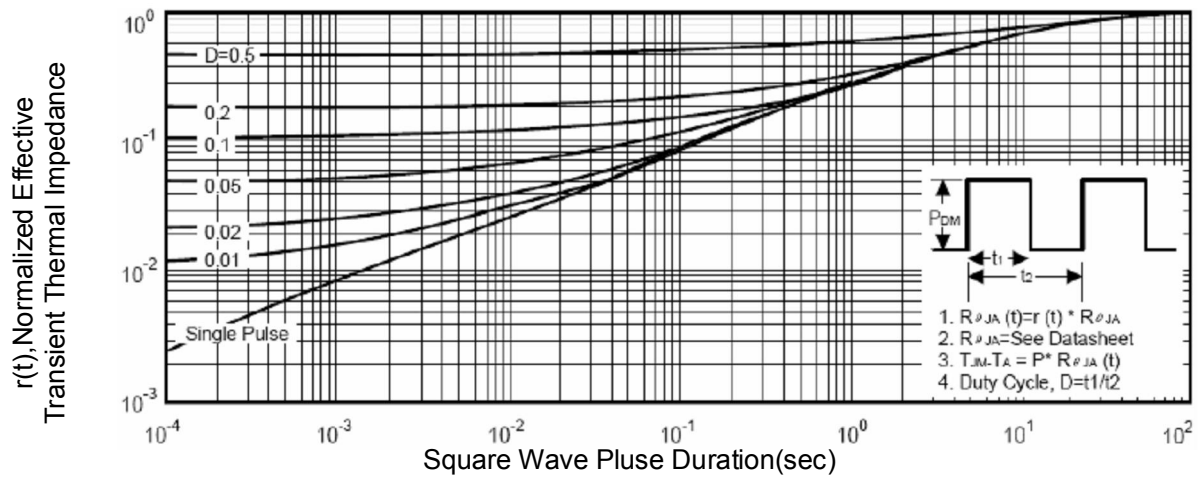
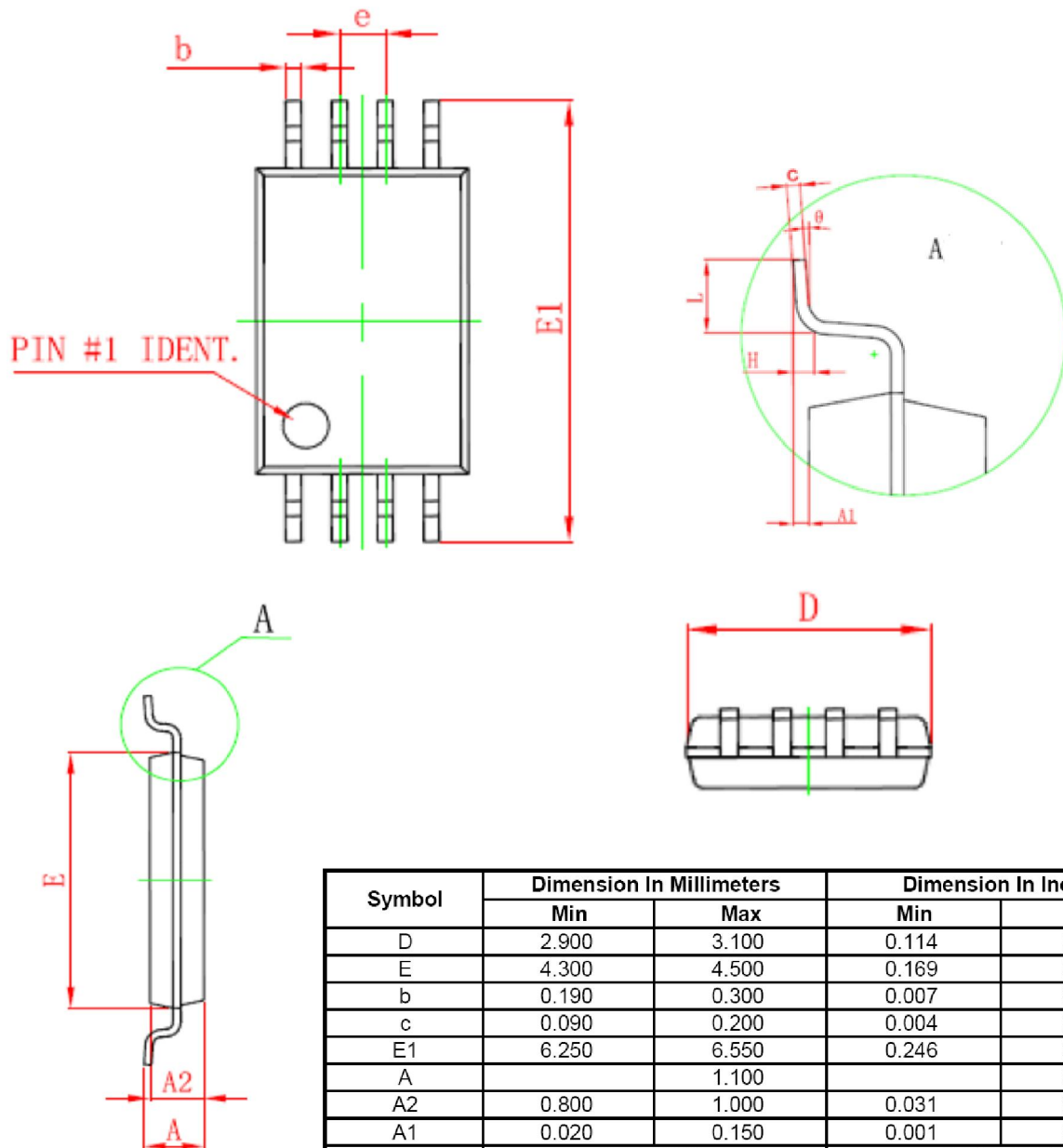


Figure 3 Normalized Maximum Transient Thermal Impedance

TSSOP-8 PACKAGE INFORMATION



Symbol	Dimension In Millimeters		Dimension In Inches	
	Min	Max	Min	Max
D	2.900	3.100	0.114	0.122
E	4.300	4.500	0.169	0.177
b	0.190	0.300	0.007	0.012
c	0.090	0.200	0.004	0.008
E1	6.250	6.550	0.246	0.258
A		1.100		0.043
A2	0.800	1.000	0.031	0.039
A1	0.020	0.150	0.001	0.006
e	0.65 (BSC)		0.026 (BSC)	
L	0.500	0.700	0.020	0.028
H	0.25 TYP		0.01 TYP	
θ	1°	7°	1°	7°

NOTES:

1. Dimensions are inclusive of plating
2. Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 6 mils.
3. Dimension L is measured in gauge plane.
4. Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.